Mathematics 3200
June 2014 Public Exam Outcome Report

This examination follows the specifications, conventions and standards set out in the:
Mathematics Public Examination Standards

Chapters:
1 Polynomial Functions
2 Function Transformations
3 Radical Functions
4 Trigonometry and the Unit Circle
5 Trigonometric Functions and Graphs
6 Trigonometric Identities
7 Exponential Functions
8 Logarithmic Functions
9 Permutations, Combinations and the Binomial Theorem

PART I: Selected Response—Total Value: 50%

Item	Curriculum Guide Pages	Outcome	Cognitive Level	Outcome Description
1	22	RF11	L2M	Identify a polynomial function.
2	22	RF11	L2M	Given characteristics of a polynomial, identify its graph.
3	28	RF10	L2M	Find the zeros of a polynomial function.
4	22,36	RF11	L2A	Identify the equation of a polynomial function given its graph.
5	28	RF10	L2A	Determine the remainder if a polynomial is divided by a factor.
6	28	RF10	L2A	Determine a factor of a given polynomial.
7	44	RF1	L2M	Identify the function of a transformed graph.
8	66	RF5	L2M	Identify graphs which are inverses of one another.

9	52,54	RF2	L2A	Use knowledge of stretches to write the function of a transformed graph.
10	56	RF3	L2A	Find the image point given the equation of the transformed function.
11	56	RF3	L2A	Describe, in words, the transformations of a given function.
12	56	RF3	L2A	Given the transformations, identify the equation of the function.
13	76	RF12	L2M	Identify the graph of $y = \sqrt{f(x)}$.
14	72	RF12	L2A	Identify the graph of the function $y - k = a\sqrt{b(x - h)}$.
15	72	RF12	L2A	Identify the domain of the function $y - k = a\sqrt{b(x - h)}$.
16	86	T1	L2M	Express an angle in radian measure.
17	90	T2	L2M	Identify the equation of a circle centered at the origin with a radius of *r*.
18	92	T3	L2A	Find the exact value of a trigonometric expression.
19	94	T3	L2A	Determine angles in degrees or radians given the value of a trigonometric ratio
20	96	T3	L2A	Given a value of one trigonometric ratio, determine the value of another trigonometric ratio.
21	136	T5	L2A	Identify the error in a solution for a trigonometric equation.
22	108	T4	L2M	Determine a characteristic of a sinusoidal function given its equation.
23	108	T4	L2M	Determine a characteristic of a sinusoidal function given its graph.

24	108,110	T4	L2A	Identify the equation of a trigonometric function given its graph.
25	110	T4	L2A	Write the equation of a sinusoidal function given its key characteristics.
26	114	T5	L2A	Using a trigonometric graph, identify the general solution for an equation.
27	122	T6	L2M	Determine the non-permissible values of a trigonometric expression.
28	128	T6	L2M	Determine, using the sum, difference, or double angle formulae, the exact value of a trigonometric expression.
29	128	T6	L2M	Determine, using the sum, difference, or double angle formulae, a simplified expression of a trigonometric expression.
30	126	T6	L2A	Simplify a trigonometric expression using trigonometric identities.
31	128	T6	L2A	Determine, using the sum, difference, or double angle formulae, the exact value of a trigonometric expression.
32	130	T6,T3	L2A	Given a trigonometric ratio within a defined quadrant, determine, using the sum, difference, or double angle formulae, the exact value of a trigonometric expression.
33	134	T5,T6	L3	Solve a trigonometric equation which involves the use of the properties of exponentials.
34	142	RF8	L2M	Identify a characteristic of an exponential function.
35	142	RF8	L2M	Identify a characteristic of an exponential function.
36	146	RF8	L2A	Identify the graph of an exponential function by applying a set of transformations to $y = c^x$.

37	148	RF9	L2A	Determine the solution of an exponential equation for which both sides can be written as rational powers of the same base.
38	152	RF9	L2A	Determine the equation of a word problem that involves exponential growth or decay.
39	164	RF8	L2M	Determine the domain of a logarithmic function.
40	166	RF8	L2M	Identify the graph of a logarithmic function.
41	160	RF6	L2A	Simplify a logarithmic expression.
42	172	RF9	L2A	Determine the solution of a logarithmic equation.
43	172	RF9	L2A	Determine the solution of an exponential equation in which the bases are not rational powers of one another.
44	198	PCBT3	L2M	Identify the expression that represents the number of ways a particular committee can be formed.
45	198	PCBT3	L2M	Identify equivalent expressions related to combinations and permutations.
46	204	PCBT4	L2M	Relate the coefficients of the terms in the expansion of $(x+y)^n$ to the $(n+1)$ row in Pascal's triangle.
47	196	PCBT2	L2A	Solve a problem involving permutations with constraints.
48	200	PCBT3	L2A	Determine the number of combinations of *n* different elements taken *r* at a time to solve a problem.
49	204	PCBT4	L2A	Determine a specific term in a binomial expansion.

50	186	PCBT1	L3	Solve a simple counting problem by applying the fundamental counting principle.

PART II: Constructed Response—Total Value: 50%

Item	Curriculum Guide Page	Outcome	Cognitive Level	Value	Outcome Description
51a	28,30,34	RF10,RF11	L2A	4	Given a polynomial function, algebraically determine all intercepts and sketch its graph.
51b	22,24,32	RF11	L3	2	Identify errors in a graph that is intended to represent a given polynomial function.
52	66	RF5	L2A	3	Restrict the domain of a given function in order for its inverse to be a function and then find the inverse.
53a	78	RF12	L2A	2	Determine, graphically, the solution of a radical equation.
53b	72	RF12	L3	2	Apply transformations to a given radical function and write the equation of the new function.
53c	74	RF12	L3	2	Determine the domain and range of a radical function.
54	98	T5	L2A	3	Algebraically determine the solutions of a quadratic trigonometric equation with a restricted domain.
55a	114	T5	L3	3	Algebraically determine the solutions of a trigonometric word problem with the equation being given.

55b	114	T5	L2A	4	Algebraically determine the solutions to a trigonometric equation with restrictions.
56a	128	T6	L2A	4	Determine the exact value of a trigonometric ratio in simplest form using the sum, difference or double angle identities.
56b	132	T6	L3	3	Prove, algebraically, that a trigonometric identity is valid.
57a	148	RF9	L2A	4	Determine the solution of an exponential equation for which both sides can be written as rational powers of the same base, and interpret the answer as it would relate to the graphs of two functions.
57b	152	RF9	L3	4	Solve an exponential growth or decay problem where A is expressed as a percentage of A_o.
58	172	RF9	L2A	4	Solve a logarithmic equation using the laws of logarithms.
59a	200	PCBT3	L2A	4	Given the value of k, $k \in N$, solve ${}_nC_r = k$.
59b	194,196	PCBT2	L3	2	Solve a permutation word problem that has restrictions and repetition.